

Heri Purnawan

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EDUCATION

Institut Teknologi Sepuluh Nopember

Surabaya, Indonesia

Dr. in Applied Mathematics

August 2020 – August 2024

- Thesis title: *Disturbance Observer-based Stochastic Model Predictive Control Design for Systems with Parameter Uncertainties and Disturbances*
- Supervisor: Prof. Subchan, S.Si., M.Sc., Ph.D
- Co-Supervisors: Dr. Tahiyatul Asfihani, S.Si., M.Si.
Prof. Seungkeun Kim, Ph.D (Aerospace Engineering, Chungnam National University)

Institut Teknologi Sepuluh Nopember

Surabaya, Indonesia

M.Si. in Applied Mathematics

August 2016 – August 2018

- Thesis title: *Disturbance Compensating Model Predictive Control for Warship Heading Control in Missile Firing Mission*
- Supervisors: Subchan, S.Si., M.Sc., Ph.D
Dr. Dieky Adzkiya, S.Si., M.Si.

Institut Teknologi Sepuluh Nopember

Surabaya, Indonesia

S.Si. in Applied Mathematics

August 2011 – August 2015

- Thesis title: *Linear Quadratic Regulator (LQR) for Flight Stability of LSU-05*
- Supervisors: Dr. Dra. Mardijah, MT
Ir. Eko Budi Purwanto, MT (National Institute of Aeronautics and Space (LAPAN))

PUBLICATIONS

Journal Articles

- International
 1. **H. Purnawan**, T. Asfihani, S. Kim, and S. Subchan, "Model predictive control design under stochastic parametric uncertainties based on polynomial chaos expansions for f-16 aircraft," *Journal of Robotics and Control (JRC)*, vol. 5, no. 3, pp. 723–732, 2024.
 2. N. Ilmayasinta and **H. Purnawan**, "Optimal control in a mathematical model of smoking," *Journal of Mathematical & Fundamental Sciences*, vol. 53, no. 3, 2021.
 3. **H. Purnawan**, S. Subchan, D. Adzkiya, and T. Asfihani, "Trajectory tracking of coordinated multi-robot systems using nonlinear model predictive control," *Nonlinear Dynamics and System Theory*, vol. 21, no. 3, pp. 303–314, 2021.
- National
 1. R. A. Faroh, **H. Purnawan**, and M. M. Junaidi, "Tingkat depresi, stres, dan kecemasan mahasiswa teknik elektro selama pembelajaran daring," *Tarbiyah Wa Ta'lim: Jurnal Penelitian Pendidikan dan Pembelajaran*, vol. 10, no. 1, pp. 1–11, 2023.
 2. **H. Purnawan**, R. A. Faroh, M. H. Wahyudi, and S. Cahyaningtias, "Optimal control with treatment and water sanitation for cholera epidemic model," *EKSAKTA: Berkala Ilmiah Bidang MIPA*, vol. 23, no. 03, pp. 373–381, 2023.
 3. **H. Purnawan**, U. Ilmi, R. A. Faroh, and F. Resmi, "Moving horizon state estimation with application to autonomous vehicle," *Inprime: Indonesian Journal of Pure and Applied Mathematics*, vol. 5, no. 1, pp. 47–59, 2023.
 4. **H. Purnawan** and S. Subiono, "Barisan aritmetika bertingkat dengan menggunakan interpolasi lagrange," *Limits: Journal of Mathematics and Its Applications*, vol. 19, no. 2, pp. 145–154, 2022.

Conference Proceedings

- International

1. **H. Purnawan**, T. Asfihani, S. Kim, and S. Subchan, "Stochastic model predictive control for flight path angle tracking of f-16 aircraft based on polynomial chaos," in 2024 *International Seminar on Intelligent Technology and Its Applications (ISITIA)*, IEEE, 2024, pp. 599–604.
2. S. Subchan, L. R. Amalia, T. Asfihani, and **H. Purnawan**, "Reference tracking of quadrotor using modified nonlinear model predictive control based on nonlinear disturbance observer," in *International Conference on Mathematics: Pure, Applied and Computation*, Springer, 2023, pp. 87–104.
3. U. Ilmi and **H. Purnawan**, "Study on the problems of particle dynamics and rigid bodies (mechanical engineering field) and electrical circuits (electrical engineering)," in *Proceeding International Conference on Environment Health, Socioeconomic and Technology*, vol. 1, 2022, pp. 213–226.
4. **H. Purnawan**, T. Asfihani, and S. Subchan, "Disturbance observer model predictive control with application to uav pitch angle control," in *AIP Conference Proceedings*, AIP Publishing, vol. 2641, 2022.
5. **H. Purnawan**, U. Ilmi, R. A. Faroh, and A. B. A. A. Rizqi, "Positioning estimation of autonomous car using extended kalman filter," in *Proceeding International Conference on Environment Health, Socioeconomic and Technology*, vol. 1, 2022, pp. 96–102.
6. **H. Purnawan**, T. Asfihani, D. Adzkiya, et al., "Disturbance compensating model predictive control for warship heading control in missile firing mission," in *Journal of Physics: Conference Series*, IOP Publishing, vol. 1108, 2018, p. 012 035.
7. **H. Purnawan**, T. Asfihani, D. Adzkiya, et al., "Mathematical modeling and simulation of missile firing impact force on warship," in 2018 *International Seminar on Research of Information Technology and Intelligent Systems (ISRITI)*, IEEE, 2018, pp. 566–570.
8. T. Asfihani, D. Adzkiya, D. M. Rosyid, **H. Purnawan**, R. Kamilah, et al., "Estimation of the corvette sigma motion in missile firing mission," in 2017 *5th International Conference on Instrumentation, Control, and Automation (ICA)*, IEEE, 2017, pp. 203–207.
9. **H. Purnawan**, E. B. Purwanto, et al., "Design of linear quadratic regulator (lqr) control system for flight stability of lsu-05," in *Journal of Physics: Conference Series*, IOP Publishing, vol. 890, 2017, p. 012 056.

- National

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RESEARCH FUNDINGS

Research for Early-Career Lecturers (PDP)	2025
<i>Ministry of Higher Education, Science, and Technology (KEMDIKTISAINTEK)</i>	<i>Indonesia</i>
<ul style="list-style-type: none"> • Principal Investigator (PI) • Research Title: Pengembangan Kalman Filter untuk Estimasi Gangguan pada Pesawat Tempur dengan Ketidakpastian Parameter dan Noise Data Sensor (<i>Development of Kalman Filter for Disturbance Estimation in Fighter Aircraft with Uncertainty Parameters and Sensor Data Noise</i>) 	

EXPERIENCES

Universitas Islam Lamongan	February 2022 – Present
<i>Department of Electrical Engineering</i>	<i>Lamongan, Indonesia</i>
<ul style="list-style-type: none"> • Lecturer • Research Group: <i>System Modelling and Control</i> 	
Indonesia College	2016 – 2018
<i>Math Tutor</i>	<i>Surabaya, Indonesia</i>
Institut Teknologi Sepuluh Nopember	2016 – 2017
<i>Department of Mathematics</i>	<i>Surabaya, Indonesia</i>
<ul style="list-style-type: none"> • Lecturer Assistant 	

- Calculus 1 & 2

Junior High School 1 Sugio

Mathematical Olympiad Tutor

National Institute of Aeronautics and Space (LAPAN)

Aeronautics Technology Center

- Internship Program
- Project title: *Modeling and Simulation of LAPAN Surveillance UAV (LSU)-05*

2015 – 2016

Lamongan, Indonesia

2014

Bogor, Indonesia

ACHIEVEMENTS

Indonesian Education Scholarship (BPI)

2023

Doctoral Study Completion

Ministry of Education, Culture, Research and Technology

Postgraduate Scholarship for Researcher (BPUP)

2020 – 2022

Doctoral's Degree

Institut Teknologi Sepuluh Nopember

Graduated Cumlaude

2018

Master's Degree

Institut Teknologi Sepuluh Nopember

Fresh Graduate Scholarship

2016 – 2018

Master's Degree

Institut Teknologi Sepuluh Nopember

Graduated Cumlaude

2015

Bachelor's Degree

Institut Teknologi Sepuluh Nopember

Bidik Misi Scholarship

2011 – 2015

Bachelor's Degree

Ministry of Education and Culture

TEACHING

Universitas Islam Lamongan

Lamongan, Indonesia

Spring Semester

- TE4485 Engineering Mathematics II, Dept. of Electrical Engineering, 2025
- TE2215 Fundamentals of Chemistry, Dept. of Electrical Engineering, 2022 – 2025
- TE1205 Fundamentals of Computer and Programming, Dept. of Electrical Engineering, 2024
- TE7251 Artificial Intelligence, Dept. of Electrical Engineering, 2022 – 2024
- IFMWP03 Linear Algebra, Dept. of Informatics Engineering, 2022

Universitas Islam Lamongan

Lamongan, Indonesia

Fall Semester

- TE3233 Fundamentals of Control System, Dept. of Electrical Engineering, 2022 – 2024
- TE4249 Linear System, Dept. of Electrical Engineering, 2022 – 2024
- TE5278 Numerical Method, Dept. of Electrical Engineering, 2022 – 2024
- KL1209 Fundamentals of Calculus, Dept. of Environmental Health, 2024
- KKM24420 Ordinary Differential Equation, Dept. of Mathematics Education, 2024
- Engineering Mathematics/Calculus, Dept. of Civil Engineering, 2022 – 2023

SKILLS & RESEARCH INTERESTS

Skills

- Languages: *Indonesia, English*
- Coding: *Matlab, C, C++*
- Misc.: *Training, consultation, LATEX typesetting*

Research Interests

- Differential Equation
- Numerical Analysis
- Optimization
- Estimation
- Optimal Control
- Model Predictive Control
- System Identification

REFERENCES

Prof. Subchan

Department of Mathematics, Institut Teknologi Sepuluh Nopember

- Address: Building F, 2nd Floor, ITS Campus, Keputih, Sukolilo-Surabaya 60111
- E-mail: subchan@its.ac.id

Professor

Surabaya, Indonesia

Dr. Dieky Adzkiya

Department of Mathematics, Institut Teknologi Sepuluh Nopember

- Address: Building F, 2nd Floor, ITS Campus, Keputih, Sukolilo-Surabaya 60111
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Assistant Professor

Surabaya, Indonesia

Prof. Mardlijah

Department of Mathematics, Institut Teknologi Sepuluh Nopember

- Address: Building F, 2nd Floor, ITS Campus, Keputih, Sukolilo-Surabaya 60111
- E-mail: mardlijah@its.ac.id

Professor

Surabaya, Indonesia